

REMARKS

Claims 1-23 are pending in this application. Claims 1, 14, and 17-19 have been amended. The Office Action purports to have withdrawn claims 17-23 from further consideration; as discussed below, Applicants submit that withdrawal of claims which are subject to a curable objection, in a first Office Action on the merits, is premature and improper, and that, following the amendments herein, claims 1-23 must remain pending in this application.

The amendments do not introduce new matter within the meaning of 35 U.S.C. §132. Basis for the claim amendments is found on page 10, line 26 to page 11, line 28; in Figures 4 and 5; in claims 1-23 as originally filed; and elsewhere throughout the specification and claims. Accordingly, entry of the amendments is respectfully requested.

1. Objection to Claims 17-23

The Office Action objects to Claims 17-23 under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can not depend from another multiple dependent claim. See MPEP §608.01(n). Accordingly, the claims have not been further treated on the merits.

Applicants thank the Examiner for his comments, and have amended claims 17-19 to make such claims depend from claim 14 only. Applicants respectfully submit that the grounds for objection have thus been removed. As no additional multiple dependency or additional claims have been added, no additional claims fees are required for this amendment.

Applicants respectfully traverse the withdrawal of claims 17-23. As MPEP §608.01(n) makes clear, the Examiner has two options in dealing with an improper multiple dependent claim: "require cancellation of such improper dependent claim or rewriting of such improper dependent claim in independent form," citing *Ex parte Porter*, 25 USPQ2d 1144, 1147 (BPAI 1992).

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the objection to claims 17-23, and to examine all of claims 1-23 on the merits in the next Office Action.

**2. Rejection of Claims 14-16 under 35 U.S.C. §112,  
second paragraph**

The Office Action rejects claims 14-16 under 35 U.S.C. §112, second paragraph, for the following reasons:

In claim 14, lines 2 and 4, respectively, it unclear what applicant means by the terms "first utility" and "second utility".

Applicants thank the Examiner for pointing out this potential lack of clarity in claim 14. Applicants have amended claim 14 to make clear that the "first utility" and "second utility" refer to input utilities.

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

**3. Rejection of Claims 1-16 under 35 U.S.C. §102(e)**

The Office Action rejects claims 1-16 under 35 U.S.C. §102(e) as being anticipated by Lemchen (United States Patent No. 6,081,739; the '739 patent). As the basis for this rejection, the Office Action states:

Lemchen discloses an image processing method comprising applying a first imaging technique, x-ray, to acquire a first 2-d image of a patient's teeth and a second imaging technique, sonic or optical 3-d imaging, to acquire a second 3-D image of the patient's teeth, and third imaging technique to acquire a third image comprising at least facial aspects of the patient. A set of landmarks are defined on one of the images and then located on the others and then the set of landmarks registered in each of the images. Orthodontic changes may be applied to the teeth of one of the images and is immediately correlated in the other images.

Applicants respectfully traverse this rejection on the basis that the '739 patent fails to teach the claimed subject matter. Applicants' claims are directed to an image processing method

comprising: (a) applying at least a first imaging technique and a second imaging technique to acquire a first, two-dimensional image of at least a first portion of teeth and a second three-dimensional virtual image of at least a second portion of the teeth.

By contrast, Lemchen does not disclose registering a two dimensional image and a three dimensional image, as claimed herein. Lemchen discloses producing an image incorporating correlated superficial, three dimensional surface and x-ray images and measurements of an object. Specifically, as described in the first four paragraphs in col. 8, and shown in Figs. 3 to 6, Lemchen teaches the registering of three 3D images. Fig. 3 shows a 3D image of a person's "superficial facial and jaw structure" (col 8 line 2). The image was obtained from "a real time visual or color video scan" (col 8 lines 1-2). Fig. 4 shows a 3D image of a persons "teeth and jaw structure" obtained by "a panographic x-ray exposure" (col 8 lines 5 and 28-29). Fig. 5 shows "the optically determined three dimensional physical contour of the patients face". (col 8 lines 21-23). Fig. 6 shows the registration of the three 3D images. (col 8 lines 31-34). Further, Applicants also note that in the image in Fig. 3, the mouth is closed, and the teeth are not seen in this image. Rather, Fig. 3 only shows "the superficial parents of the teeth" (col 8 line 18). That is, the

external shape of the jaw region determined by the teeth when the mouth is closed. This also is different from the subject matter claimed herein, which recites a two dimensional image and a three dimensional image of "at least a portion of teeth". Therefore, Lemchen does not disclose the claimed subject matter of the present application, which requires registering a two dimensional image and a three dimensional image.

To constitute anticipation under 35 U.S.C. § 102, all material elements of a claim must be found in one prior art source. In re Marshall, 577 F.2d 301, 198 USPQ 344 (CCPA 1978); In re Kalm, 378 F.2d 959, 154 USPQ 10 (CCPA 1967). The '739 patent's disclosure of a plurality of three dimensional images is not tantamount to a disclosure of a two dimensional image and a three dimensional image, as claimed herein. Thus, in the absence of any teaching in the '739 patent that a two dimensional image and a three dimensional image could be substituted for a plurality of three dimensional images, the '739 patent does not anticipate the present claims.

Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

4. Rejection of Claims 1-3, 6/1-6/3, and 14 under 35 U.S.C.

§103(a)

The Office Action rejects claims 1-3, 6/1-6/3, and 14 under 35 U.S.C. §103(a) as being unpatentable over Truppe (European Patent No. 0 488 987 A1, cited by applicant). As the basis for this rejection, the Office Action states:

Truppe discloses the invention essentially as claimed except for the first 2-D image and second 3-D image being of a patient's teeth. It would have been obvious to image a patient's teeth in the method disclosed by Truppe in order to provide for virtual orthodontic treatment of the patient.

Applicants first note their uncertainty with what claims "6/1-6/3," as rejected in the Office Action, actually means. However, based on the discussion below, this uncertainty appears moot: the Truppe reference does not teach or suggest the inventive subject matter claimed in any claim.

Applicants respectfully traverse this rejection. To establish a *prima facie* case, the PTO must satisfy three requirements. First, the prior art reference must teach or suggest all the limitations of the claims. *In re Wilson*, 424 F.2d 1382, 1385; 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Second, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or

incentive that would have motivated the skilled artisan to modify a reference. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Third, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991). The cited art meets none of these tests.

Truppe discloses a method of imaging a person's jaw and a model therefor, consisting of a device for positional determination; at least one two dimensional picture of the jaw; an impression of the jaw taken to create a model; and a 3D sensor. More particularly, Truppe nowhere mentions a three dimensional image, only two dimensional images and three dimensional sensors. Truppe discloses superimposing two two dimensional images of the same jaw, obtained at different times. Optionally, the second image may be obtained from a model of the jaw, instead of directly from the jaw itself. Although Truppe refers to three dimensional "sensors," such sensors are used to determine the spatial orientation of the "device for positional determination" (element 3 in Fig. 1), as well as the spatial orientation of the jaw and the camera. The three dimensional **sensors** are not used to obtain a

three dimensional **image**.

Applicants also note that in Truppe, the "landmarks" that are used are fixed on the "device for positional determination." The landmarks are shown in the Figures as the spots (4) on the device (3). These are not "a set of basic *anatomical landmarks*," as claimed herein.

Truppe does not disclose a two dimensional image and a three dimensional image. Thus, in the absence of any teaching or suggestion in Truppe that the two two dimensional images and a three dimensional sensor may be modified to reach the inventive subject matter of a two dimensional image and a three dimensional image, the claimed subject matter of the present application is not disclosed in Truppe, and therefore cannot be obvious over Truppe.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw this rejection.

**CONCLUSION**

Based upon the above remarks, the presently claimed subject matter is believed to be novel and patentably distinguishable over the prior art of record. The Examiner is therefore respectfully requested to reconsider and withdraw the rejections of remaining claims 1-23 and allow all pending claims presented herein for

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reconsideration. Favorable action with an early allowance of the claims pending in this application is earnestly solicited.

The Examiner is welcomed to telephone the undersigned attorney if he has any questions or comments.

Respectfully submitted,

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